ROC920010201US1

PATENTS

In the Claims

Please amend the claims to read as follows:

1. (Currently Amended) An apparatus comprising: ~~A~~ a scheduler for a network processor, the scheduler including a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having:

a range R, and

a plurality of flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue,

wherein the distance D ~~being~~ is calculated for each flow according to the formula D = ((WF x FS)/SF),

~~where:~~ wherein WF is a weighting factor applicable to a respective flow~~;~~, FS is a frame size attributable to the respective flow~~;~~, and SF is a scaling factor; and

wherein the scheduler is operative to:

compare the distance D to the range R; and

adjust the scaling factor SF depending on a result of the comparing step

~~the scaling factor SF is adjusted depending on a result of comparing the distance D to the range R~~.

2. (Original) The scheduler of claim 1, wherein SF is increased if D > R.

3. (Original) The scheduler of claim 2, wherein SF is increased if D exceeds R in regard to a predetermined number of calculations of D.

4. (Original) The scheduler of claim 1, wherein SF is decreased if D < R/2.

5. (Original) The scheduler of claim 4, wherein SF is decreased if D is less than one-half R in regard to a predetermined number of calculations of D.

6. (Original) The scheduler of claim 1, wherein SF = 2n, n being a positive integer.

7. (Original) A scheduler of claim 6, wherein n is incremented to adjust SF.

8. (Original) The scheduler of claim 6, wherein n is decremented to adjust SF.

9. (Currently Amended) A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R; ~~and~~

adjusting the scaling factor SF based on a result of the comparing step; and

managing the scheduling queue based on the adjusted scaling factor SF.

10. (Original) The method of claim 9, wherein the scaling factor SF is increased if the comparing step determines that D > R.

11. (Original) The method of claim 9, wherein the scaling factor SF is decreased if the comparing step determines that D < R/2.

12. (Original) The method of claim 9, wherein SF = 2n, n being a positive integer, and the adjusting step includes incrementing or decrementing n.

13. (Currently Amended) A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R;

incrementing a counter if the comparing step determines that D > R; ~~and~~

increasing SF if the incremented counter exceeds a threshold; and

managing the scheduling queue based on the scaling factor SF.

14. (Original) The method of claim 13, wherein SF = 2n, n being a positive integer, and the increasing step includes incrementing n.

15. (Currently Amended) A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R;

incrementing a counter if the comparing step determines that D < R/2; ~~and~~

decreasing SF if the incremented counter exceeds a threshold; and

managing the scheduling queue based on the scaling factor SF.

16. (Original) The method of claim 15, further comprising:

clearing the counter if the comparing step determines that D > R/2.

17. (Original) The method of claim 15, wherein SF = 2n, n being a positive integer, and the decreasing step includes decrementing n.

18. (Currently Amended) A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R;

incrementing a first counter if the comparing step determines that D > R;

increasing SF if the incremented first counter exceeds a first threshold;

incrementing a second counter if the comparing step determines that D < R/2; ~~and~~

decreasing SF if the incremented second counter exceeds a second threshold; and

managing the scheduling queue based on the scaling factor SF.

19. (Original) The method of claim 18, further comprising:

clearing the second counter if the comparing step determines that D > R/2.

20. (Original) The method of claim 18, wherein SF = 2n, n being a positive integer, the increasing step includes incrementing n, and the decreasing step includes decrementing n.

21. (Currently Amended) A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R; ~~and~~

increasing SF if the distance D exceeds the range R; and

managing the scheduling queue based on the scaling factor SF.

22. (Currently Amended) A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R;

increasing SF if the distance D exceeds the range R;

incrementing a counter if the comparing step determines that D < R/2; ~~and~~

decreasing SF if the incremented counter exceeds a threshold; and

managing the scheduling queue based on the scaling factor SF.

23. (Currently Amended) An apparatus comprising: ~~A~~

a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having:

a range R, and

a plurality of flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue,

wherein the distance D ~~being~~ is calculated for each flow according to the formula D = ((WF x FS)/SF),

~~where:~~ wherein WF is a weighting factor applicable to a respective flow~~,~~, FS is a frame size attributable to the respective flow~~,~~, and SF is a scaling factor; and

wherein the scheduler is ~~adapted~~ operative to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increment a counter if the comparison of the distance D to the range R determines that D > R; and

increase SF if the incremented counter exceeds a threshold.

24. (Currently Amended) An apparatus comprising: ~~A~~

a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having:

a range R, and

a plurality of flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue,

wherein the distance D ~~being~~ is calculated for each flow according to the formula D = ((WF x FS)/SF),

~~where:~~ wherein WF is a weighting factor applicable to a respective flow~~,~~, FS is a frame size attributable to the respective flow~~,~~ and SF is a scaling factor;

wherein the scheduler is ~~adapted~~ operative to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increment a counter if the comparison of the distance D to the range R determines that D < R/2; and

decrease SF if the incremented counter exceeds a threshold.

25. (Currently Amended) An apparatus comprising: ~~A~~

a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having:

a range R, and

a plurality of flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue,

wherein the distance D ~~being~~ is calculated for each flow according to the formula D = ((WF x FS)/SF),

~~where:~~ wherein WF is a weighting factor applicable to a respective flow~~,~~, FS is a frame size attributable to the respective flow~~,~~ and SF is a scaling factor;

wherein the scheduler is ~~adapted~~ operative to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increment a first counter if the comparison of the distance D to the range R determines that D > R;

increase SF if the incremented first counter exceeds a first threshold;

increment a second counter if the comparison of the distance D to the range R determines that D < R/2; and

decrease SF if the incremented second counter exceeds a second threshold.

26. (Currently Amended) An apparatus comprising: ~~A~~

a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having:

a range R, and

a plurality of flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue,

wherein the distance D ~~being~~ is calculated for each flow according to the formula D = ((WF x FS)/SF),

~~where:~~ wherein WF is a weighting factor applicable to a respective flow~~,~~, FS is a frame size attributable to the respective flow~~,~~ and SF is a scaling factor; and

wherein the scheduler is ~~adapted~~ operative to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R; and

increase SF if the distance D exceeds the range R.

27. (Currently Amended) An apparatus comprising: ~~A~~

a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having:

a range R, and

a plurality of flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue,

wherein the distance D ~~being~~ is calculated for each flow according to the formula D = ((WF x FS)/SF),

~~where:~~ wherein WF is a weighting factor applicable to a respective flow~~;~~, FS is a frame size attributable to the respective flow~~;~~, and SF is a scaling factor;

wherein the scheduler is ~~adapted~~ operative to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increase SF if the distance D exceeds the range R;

increment a counter if the comparison of the distance D to the range R determines that D < R/2; and

decrease SF if the incremented counter exceeds a threshold.

28. (Currently Amended) A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the computer program product comprising:

a medium readable by a computer, the computer readable medium having computer program code ~~adapted~~ executed steps to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increment a counter if the comparison of the distance D to the range R determines that D > R; and

increase SF if the incremented counter exceeds a threshold.

29. (Currently Amended) A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the computer program product comprising:

a medium readable by a computer, the computer readable medium having computer program code ~~adapted~~ executed steps to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increment a counter if the comparison of the distance D to the range R determines that D < R/2; and

decrease SF if the incremented counter exceeds a threshold.

30. (Currently Amended) A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the computer program product comprising:

a medium readable by a computer, the computer readable medium having computer program code ~~adapted~~ executed steps to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increment a first counter if the comparison of the distance D to the range R determines that D > R;

increase SF if the incremented first counter exceeds a first threshold;

increment a second counter if the comparison of the distance D to the range R determines that D < R/2; and

decrease SF if the incremented second counter exceeds a second threshold.

31. (Currently Amended) A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the computer program product comprising:

a medium readable by a computer, the computer readable medium having computer program code ~~adapted~~ executed steps to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R; and

increase SF if the distance D exceeds the range R.

32. (Currently Amended) A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the computer program product comprising:

a medium readable by a computer, the computer readable medium having computer program code ~~adapted~~ executed steps to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increase SF if the distance D exceeds the range R;

increment a counter if the comparison of the distance D to the range R determines that D < R/2; and

decrease SF if the incremented counter exceeds a threshold.

33. (Currently Amended) A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula D = ((WF x FS)/SF), where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the computer program product comprising:

a medium readable by a computer, the computer readable medium having computer program code ~~adapted~~ executed steps to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R; and

adjust the scaling factor SF based on a result of the comparison of the distance D to the range R.